

## Update Inflow Assumptions



Advisory Committee  
January 31, 2006  
Sacramento, California

## Update on Inflows/Modeling Working Group

- ◆ **Draft report on *Hydrology Development and Future Hydrologic Scenarios***
  - Released for comment by inflows/modeling workgroup
  - Report to be modified based on comments
- ◆ **Inflows/modeling working group convened on January 18, 2006 to discuss hydrology development and preliminary modeling of alternatives**

## Overview of Development of Inflows

- ◆ **Goal is to develop inflow and salt loading assumptions for No Action Alternative**
- ◆ **Analyses and approaches developed through Inflows/Modeling Working Group**
- ◆ **Three separate hydrologic scenarios have been developed**
  - Historical conditions, 1950-2002
  - No Action Alternative-CEQA Condition, 2003-77
  - No Action Alternative-Variability Condition, 2003-77

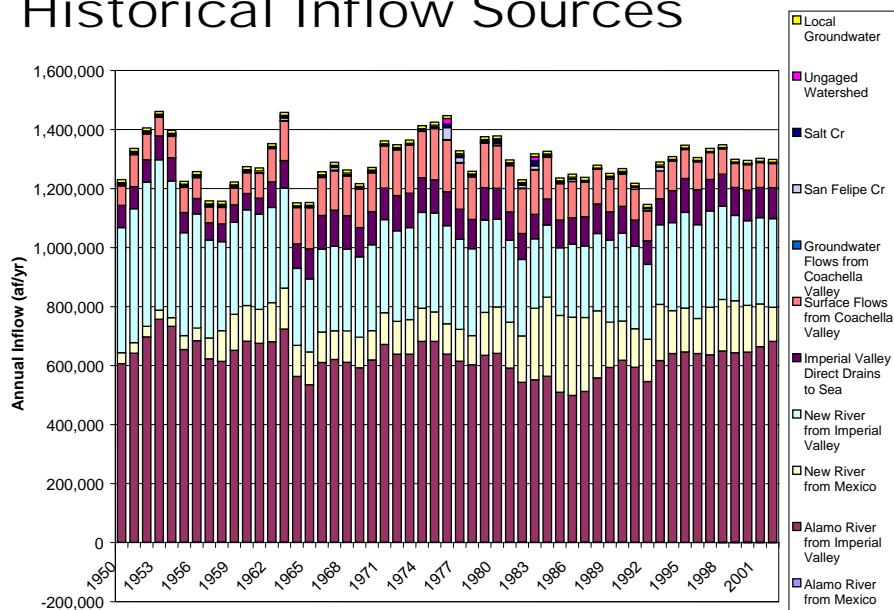
## Overview of Historical Hydrology

- ◆ **Compiled measured and estimated flows**
- ◆ **Revised projections for Mexico and local watershed contributions**
- ◆ **Revised long-term historical evaporation estimates**
- ◆ **Estimated magnitude of salt removal (precipitation) mechanisms at the Salton Sea**

## Key Findings of Historical Hydrology over 1950-2002 Period

- ◆ **Inflows estimated at 1.3 maf/yr**
- ◆ **Net evaporation (evaporation minus precipitation) estimated at 66.4 in/yr**
- ◆ **Salt load estimated at 4.5 million tons/yr**
  - Less than 4.0 million tons/yr since 1999
- ◆ **Salt precipitation estimated at 1.5 million tons/yr**
  - Significant salt precipitation started in late 1980's

## Historical Inflow Sources



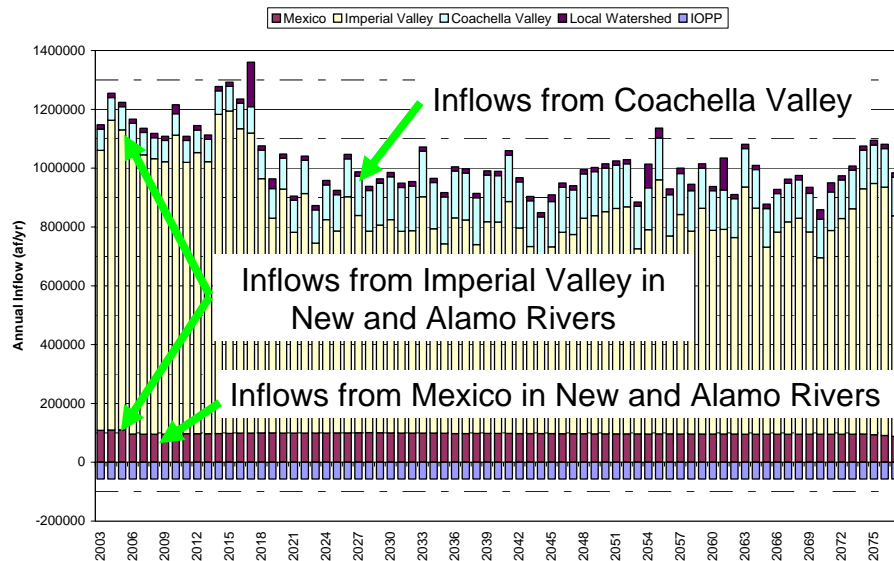
## Developed Two No Action Alternative Conditions

- ◆ **No Action Alternative based on the QSA plus other Future Actions recently identified**
- ◆ **No Action Alternative-CEQA Condition**
  - Reasonable actions that are relatively certain
- ◆ **No Action Alternative-Variability Condition**
  - Range of possible future hydrology conditions considering uncertainty over the next 75 years

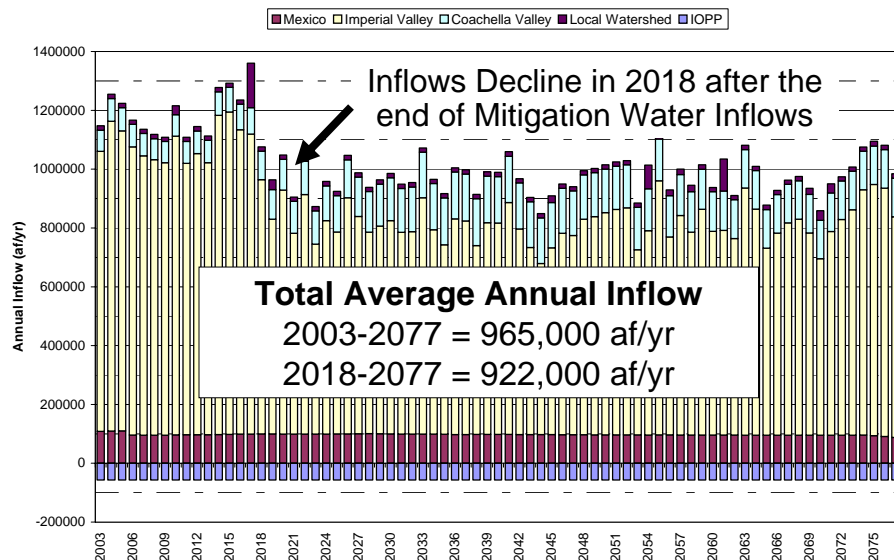
## Summary of No Action Alternative-CEQA Condition

- ◆ **QSA Conditions**
- ◆ **Other actions identified following development of QSA No Action Alternative**
  - Mexicali Wastewater Treatment Plant and Conveyance Improvements that reduce New River flows
  - Mexicali Power Plants that divert New River flows
  - Coachella Canal Lining Project that reduce seepage into local tributaries that flow to Salton Sea
  - CVWD Water Management Plan that increases groundwater flows into Salton Sea

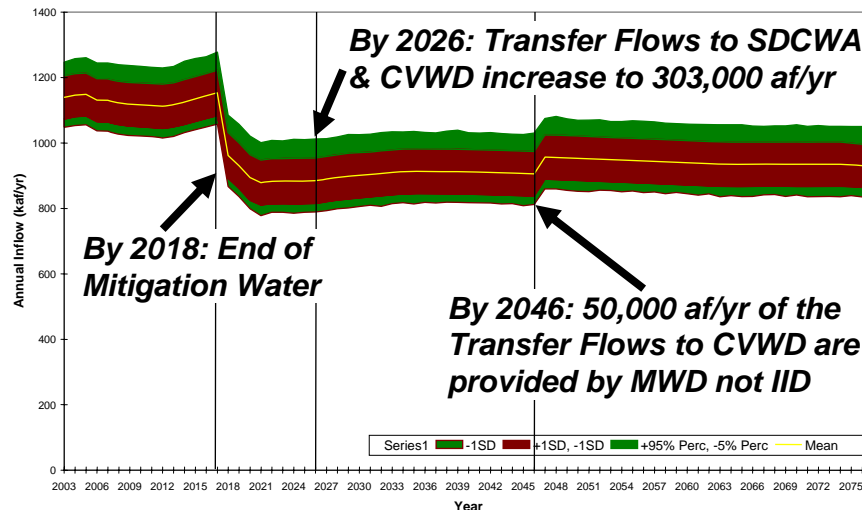
## No Action Alternative-CEQA Condition Projected Inflows



## No Action Alternative-CEQA Condition Projected Inflows



## Range of Average Annual Inflows for No Action Alternative - CEQA Condition



## Why Consider a Second No Action Alternative Condition?

- ◆ **Salton Sea is highly sensitive to inflows**
  - A 10% reduction in inflows would reduce long-term water elevation by nearly 5 ft and increase exposed playa by approximately 16,000 acres
- ◆ **Alternatives based upon a reliable future water supplies to accommodate uncertainty**
- ◆ **Water rights for inflows to support habitat are not included in the alternatives**
- ◆ **Due to uncertain future inflows and need to construct large infrastructure in some alternatives in early years, the *No Action Alternative - Variability Condition* was developed**

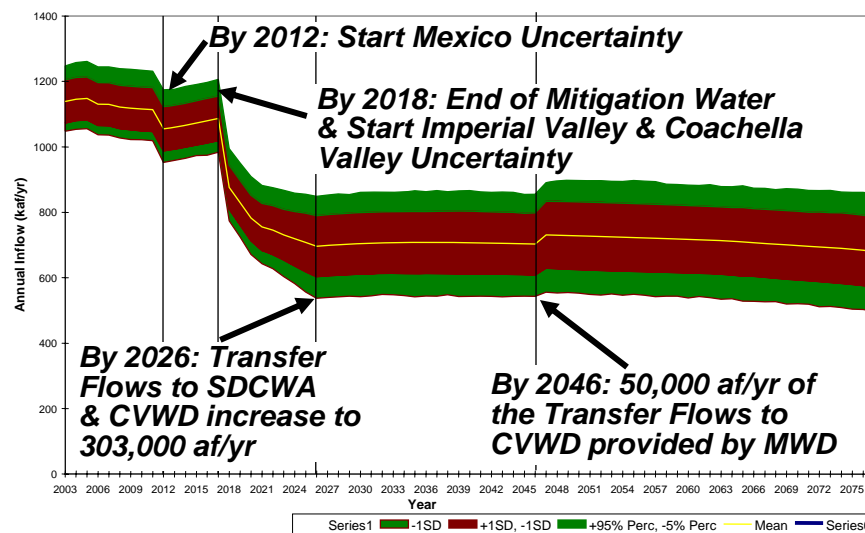
## Summary of No Action Alternative-Variability Condition

### ◆ Future uncertainty such as:

- Projects and/or impacts not included in No Action Alternative - CEQA Condition due to uncertainty in implementation
- Colorado River-Tijuana Aqueduct expansion
- Colorado River Basin salinity
- Increased water use/reuse
- Improved on-farm water use efficiency
- Reduced availability of Colorado River supplies
- Changes to inflows due to implementation of TMDLs
- Climate change ("global warming")
- Changes in cropping patterns

### ◆ Stochastic approach applied to bracket full range of possible inflow uncertainty

## Possible Range of Average Annual Inflows: No Action Alternative - Variability Condition



## Considering Uncertainty in Sizing and Placement of Major Infrastructure

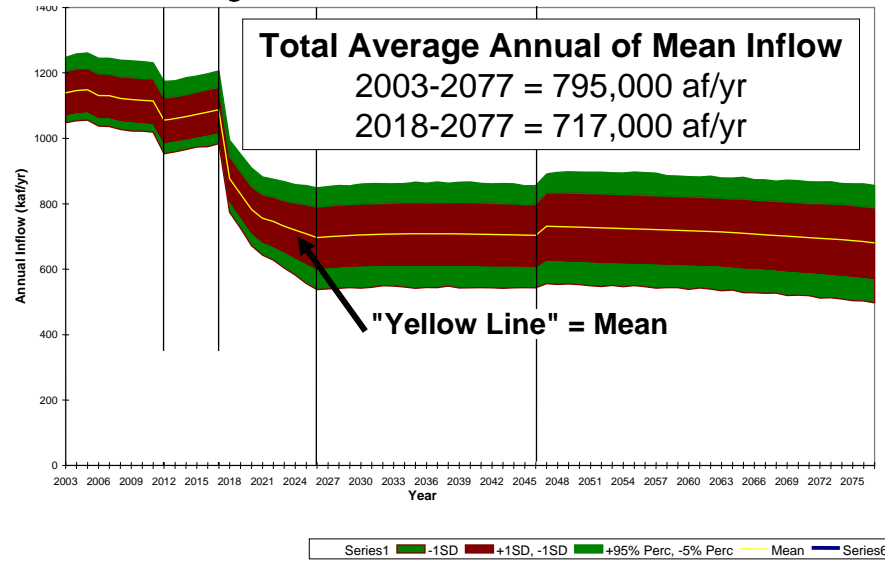
- ◆ **No Action Alternative - Variability Condition allows for assessment of the risk of future water availability**
- ◆ **Overall sizing of marine sea and habitat areas, required assumptions of long-term average annual inflows to define the available water**
- ◆ **Design of conveyance features required assumptions of daily, monthly, or peak flows**
- ◆ **PEIR assumptions are conservative - Site specific documents may have more information prior to final design**

## Sizing and Placement of Major Infrastructure for PEIR Alternatives

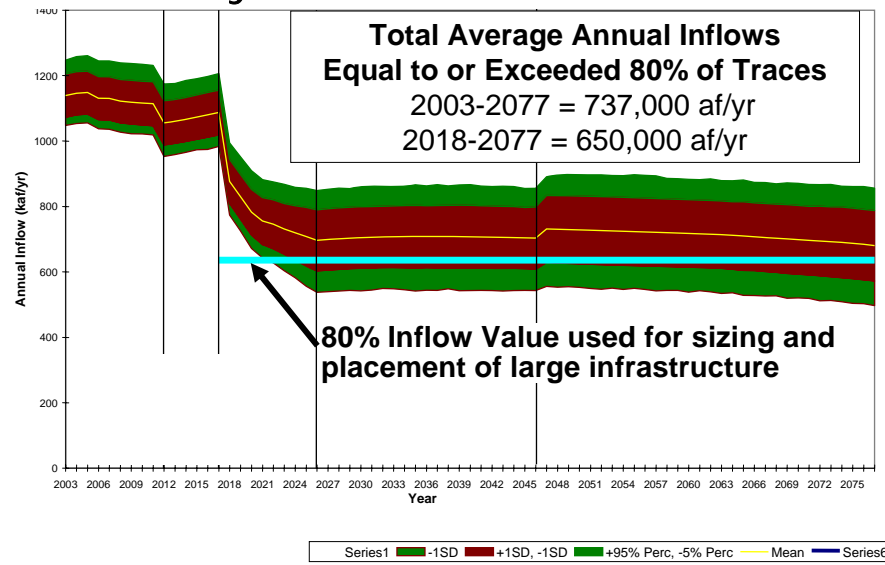
- ◆ **Inflows developed as a range of possibilities**
- ◆ **For PEIR, it was determined that sizing and placement of large infrastructure would be based on a value that would accommodate 80% of all possible future inflows**
  - Represents a low level of risk to provide upper bookend in a Programmatic Analysis
- ◆ **For all alternatives, the performance and impacts of infrastructure (sized at 80% value) will be evaluated for the full range of inflows from No Action - CEQA Condition to No Action - Variability Condition**



## Possible Range of Average Annual Inflows: No Action Alternative - Variability Condition



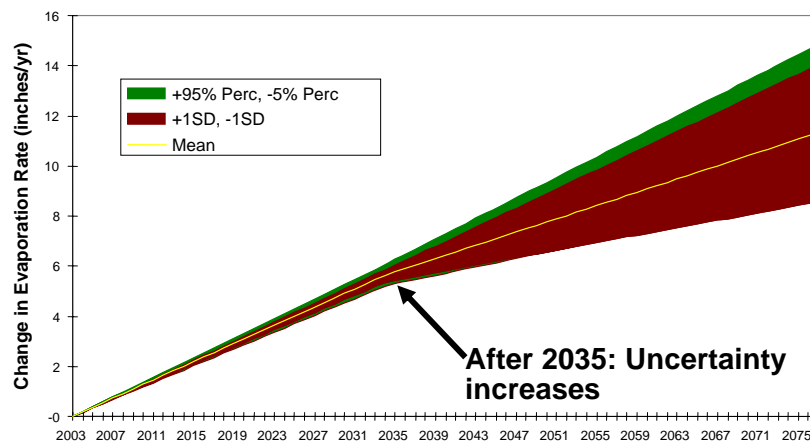
## Possible Range of Average Annual Inflows: No Action Alternative - Variability Condition



## Additional Uncertainty in Operations to include Climate Change

- ◆ **Evaporation is the only significant outflow from the Salton Sea**
- ◆ **Recent projections of California future climate conditions**
  - Most studies indicate continued temperature increases
  - Less scientific consensus on precipitation changes
  - Values used based on information from Scripps Institute analysis
- ◆ **Impact of increased evaporation rates will affect individual alternatives differently**
  - Primary change due to evaporation from marine sea and habitat water surface areas
  - Potential increases in evapotranspiration rates for managed vegetation

## Possible Future Changes in Evaporation Rate for Salton Sea



Data recently received from Scripps Institute may refine these future projections for the Salton Sea